

REMARKS

This Amendment responds to the Office Action dated February 11, 2004 in which the Examiner rejected claim 30 under 35 U.S.C. §112 second paragraph, rejected claims 25-29, 31-33 and 45-48 under 35 U.S.C. §102(b), stated that claims 34-44 are allowed and stated that claim 30 would be allowable if rewritten to include the limitations of claims 29, 27 and 25.

As indicated above, claims 27 and 29 have been incorporated into claim 30. Therefore, antecedent basis is provided for the drive chamber. Applicant respectfully submits that the rejection to claim 30 under 35 U.S.C. §112, second paragraph no longer applies. Therefore, Applicant respectfully requests the Examiner withdraws the rejection to claim 30 under 35 U.S.C. §112 second paragraph.

Claim 25 claims an electronic detonator comprising an ignition charge, a battery unit for emitting igniter current for initiating the ignition charge, an electronic circuit for controlling the emission of igniter current, and a flexible pyrotechnic shock tube. The battery unit is per se operative to emit igniter current and is movable in the detonator between a resting position, where the battery unit is electrically separated from the electronic circuit, and an activated position, where the battery unit is electrically connected to the electronic current. A battery moving means is provided, in response to external activation by the flexible pyrotechnic shock tube, for pyrotechnically causing the battery unit to move from the resting position to the activated position whereafter ignition current for initiating the ignition charge is emitted after a predetermined time delay controlled by the electronic circuit. The battery unit has the shape of a plunger or piston and is arranged in a corresponding bore in the detonator. The bore is arranged in a tubular element which has a

longitudinal extension essentially corresponding to a longitudinal extension of the detonator. The battery unit is movable in the bore from its resting position to its activated position against the action of a frictional force.

Through the structure of the claimed invention a) having an electronic circuit which controls a predetermined time delay for initiating an ignition charge, b) having a battery unit which is per se operative to emit the ignition current, and c) having a flexible pyrotechnic shock tube for external activation of a battery moving means, as claimed in claim 25, the claimed invention provides an electronic detonator which completely eliminates the risks of uncontrollable initiation of the ignition charge due to non-intended battery current being supplied. The prior art does not show, teach or suggest the invention as claimed in claim 25.

As indicated above, claim 25 has been amended to make explicit what is implicit in the claim. Applicant respectfully submits that the amendment is unrelated to a statutory requirement for patentability and does not narrow the literal scope of the claim.

Claims 25-29, 31-33 and 45-48 were rejected under 35 U.S.C. §102(b) as being anticipated by *Gawlick et al.* (U.S. Patent No. 3,641,938).

Gawlick et al. appears to describe a percussion or vibration fuse incorporating a time delay and offering maximum safety from inadvertent triggering. (col. 1, lines 14-16) As seen in Fig. 1, a striker element 2 is detachably secured by means of safety lever 1. The striker element 2 may be released by freeing the safety lever 1 in which case it impinges upon a primer cap 3, as in conventional hand grenades. The primer cap 3 in turn ignites a delay charge 4 which preferably has a burning time of 2 to 3 seconds. In contrast to conventional constructions, a gas-enriched primer

charge 5 is ignited by the delay charge 4; the primer charge 5 serves to conduct potassium hydroxide solution from a container 6 into an activatable battery 7 which supplies, for example, 1.5 volts or 1 ampere, whereby the battery is activated. Further the primer charge 5 serves to displace the battery, advancing same through a distance of several millimeters. At the bottom of the battery 7, a positive pole 8 (Fig. 2) includes a projection 9, which projection is short circuited, with the fuse device in a safety mode (Fig. 2), by way of a plate 10. During the activating procedure, the axial advancement of the battery 7 serves to obviate the short circuit and remove the projection 9 of the positive pole 8 from contact with the plate 10. In the safety mode, a pole section 11 associated with the positive pole 8 of the battery 7 is disposed such that it is surrounded by an insulating ring 12 within a contact disk 14, which disk 14 is suspended by means of three radially disposed springs 13 (Fig. 3). In this manner, the contact disk 14 is fixed in its position and is simultaneously separated from the positive pole 8 of the battery 7. The contact disk 14 is accommodated within an annular support 15, which support is connected to the positive pole of the detonator (not shown). After activation and advancement of the battery 7, that is, after the fuse has been armed (Fig. 4), contact takes place upon vibration, between the contact disk 14 and the projection 9 of the positive pole 8 and the circuit to the detonator is closed. (col. 1, line 74 through col. 2, line 32) As an additional safety measure, the battery 7 can be retained in its rest position by a spacer pin or spacer disk (not shown). (col. 2, lines 73-75)

Thus, *Gawlick et al.* merely discloses a primer cap 3 ignites a delay charge 4 which has a burn time of 2 to 3 seconds which then ignites a gas-enriched primer charge 5. Thus, nothing in *Gawlick et al.* shows, teaches or suggests an electronic

circuit which controls a predetermined time delay of an ignition current as claimed in claim 25. Rather, *Gawlick et al.* merely discloses a delay charge 4 having a burn time before igniting a primary charge 5.

Additionally, *Gawlick et al.* merely discloses releasing a safety lever 1 to cause a striker element 2 to impinge upon a primer cap 3. Nothing in *Gawlick et al.* shows, teaches or suggests a flexible pyrotechnic shock tube which provides an external activation to a battery moving means as claimed in claim 25. Rather, *Gawlick et al.* merely discloses releasing a safety lever 1 so that a striker element 2 is released to impinge upon a primer cap 3.

Additionally, *Gawlick et al.* merely discloses a timer charge 5 which causes a potassium hydrate solution from a container 6 to be conducted to battery 7 in order to activate the battery. Nothing in *Gawlick et al.* shows, teaches or suggests a battery unit which is per se operative as claimed in claim 25. Rather, *Gawlick et al.* teaches away from the claimed invention and uses a non-charged battery which does not become activated until a potassium hydroxide solution is released from a container 6 by a primer charge 5.

Since nothing in *Gawlick et al.* shows, teaches or suggests a) an electronic circuit which controls a predetermined time delay of an ignition current, b) a battery unit which is per se operative and c) a flexible pyrotechnic shock tube as claimed in claim 25, Applicant respectfully requests the Examiner withdraws the rejection to claim 25 under 35 U.S.C. §102(b).

Claims 26-29, 31-33 and 45-48 depend from claim 25 and recite additional features. Applicant respectfully submits that claims 26-29, 31-33 and 45-48 would not have been anticipated by *Gawlick et al.* within the meaning of 35 U.S.C. §102(b)

at least for the reasons as set forth above. Therefore, Applicant respectfully requests the Examiner withdraws the rejection to claims 26-29, 31-33 and 45-48 under 35 U.S.C. §102(b).

Thus, it now appears that the application is in condition for reconsideration and allowance. Reconsideration and allowance at an early date are respectfully requested. Should the Examiner find that the application is not now in condition for allowance, Applicant respectfully requests the Examiner enters this Amendment for purposes of appeal.

If for any reason the Examiner feels that the application is not now in condition for allowance, the Examiner is requested to contact, by telephone, the Applicants' undersigned attorney at the indicated telephone number to arrange for an interview to expedite the disposition of this case.

In the event that this paper is not timely filed within the current set shortened statutory period, Applicant respectfully petitions for an appropriate extension of time. The fees for such extension of time may be charged to our Deposit Account No. 02-4800.

In the event that any additional fees are due with this paper, please charge
our Deposit Account No. 02-4800.

Respectfully submitted,

BURNS, DOANE, SWECKER & MATHIS, L.L.P.

A handwritten signature in black ink, appearing to read 'Ellen Marcie Emas', written over a horizontal line.

By:

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